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(54) Title: NAPHTHYRIDINE DERIVATIVES AND THEIR USE AS FUNGICIDES

(57) Abstract: Fungicidal compositions of the general formula (1): wherein one of W, X, Y and Z is N and the others are CR8; R8 is H, halo, C<sub>1-4</sub> alkyl, C<sub>1-4</sub> alkoxy or halo(C<sub>1-4</sub>)alkyl, provided that when X is CH, Z is N, R is NHNH<sub>2</sub>, R<sup>1</sup> is phenyl and R<sup>2</sup> is Cl, W and Y are not both CCH3; one of R and R2 is NR3R4 and the other is halo, C1.8 alkyl, C1.8 alkoxy, C1.8 alkylthio, C2.8 alkenyl, C2.8 alkynyl or cyano; R1 is aryl, heteroaryl, morpholino, piperidino or pyrrolidino; R3 and R4 are independently H, C1.8 alkyl, C2.8 alkenyl, C2.8 alkynyl, aryl, aryl( $C_{1-8}$ )-alkyl,  $C_{3-8}$  cycloalkyl,  $C_{3-8}$  cycloalkyl( $C_{1-6}$ )alkyl, heteroaryl, heteroaryl( $C_{1-8}$ )alkyl, NR<sup>5</sup>R<sup>6</sup>, provided that not both  $R^3$  and  $R^4$  are H or  $NR^5R^6$ , or  $R^3$  and  $R^4$  together form a  $C_{3-7}$  alkylene or  $C_{3-7}$  alkenylene chain optionally substituted with one or more C<sub>1-4</sub> alkyl or C<sub>1-4</sub> alkoxy groups, or, together with the nitrogen atom to which they are attached, R<sup>3</sup> and R<sup>4</sup> form a morpholine, thiomorpholine, thiomorpholine S-oxide or thiomorpholine S-dioxide ring or a piperazine or piperazine N-(C1-4)alkyl (especially N-methyl) ring; and R5 and R6 are independently H, C1-8 alkyl, C2-8 alkenyl, C2-8 alkynyl, aryl, aryl, aryl, aryl(C1-8)-alkyl, C3-8 cycloalkyl, C3-8 cycloalkyl(C1-6)alkyl, heteroaryl or heteroaryl(C1-8)alkyl; any of the foregoing alkyl, alkenyl, alkynyl or cycloalkyl groups or moieties (other than for  $R^s$ ) being optionally substituted with halogen, cyano,  $C_{1.6}$  alkoxy  $C_{1.6}$  alkylcarbonyl,  $C_{1.6}$  alkoxycarbonyl,  $C_{1.6}$ haloalkoxy, C1-6 alkylthio, tri(C1-4)alkylsilyl, C1-6 alkylamino or C1-6 ialkylamino, any of the foregoing morpholine, thiomorpholine, piperidine, piperazine and pyrrolidine rings being optionally substituted with C<sub>1-4</sub> alkyl (especially methyl), and any of the foregoing aryl or heteroaryl groups or moieties being optionally substituted with one or more substituents selected from halo, hydroxy, mercapto, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, C<sub>1-6</sub> alkoxy, C<sub>2-6</sub> alkenyloxy, C<sub>2-6</sub> alkynyloxy, halo(C<sub>1-6</sub>)alkyl, halo(C<sub>1-6</sub>)alkoxy,  $C_{1\cdot6} \text{ alkylthio, halo}(C_{1\cdot6}) \text{alkylthio, hydroxy}(C_{1\cdot6}) \text{alkyl, } C_{1\cdot4} \text{ alkoxy}(C_{1\cdot6}) \text{alkyl, } C_{1\cdot6} \text{ cycloalkyl, } C_{3\cdot6} \text{ cycloalkyl}(C_{1\cdot4}) \text{alkyl, phenoxy, } C_{1\cdot6} \text{ alkylthio, halo}(C_{1\cdot6}) \text{alkylthio, hydroxy}(C_{1\cdot6}) \text{alkyl, } C_{1\cdot6} \text{ cycloalkyl, } C_{3\cdot6} \text{ cycloalky$ benzyloxy, benzoyloxy, cyano, isocyano, thiocyanato, isothiocyanato, nitro, -NHCOR", -NHCONR"R"", -CONK"R"", SO<sub>2</sub>R", -OSO<sub>2</sub>R", -COR", -CR"=NR" or -N=CR "R"", in which R" and R"" are independently hydrogen, C<sub>1-4</sub> alkyl, halo-(C<sub>1-4</sub>)alkyl, C<sub>1-4</sub> alkoxy, halo(C1-4)alkoxy, C1-4 alkylthio, C3-6 cycloalkyl, C3-6 cycloalkyl(C1-4)alkyl, phenyl or benzyl groups beings optionally substituted with halogen, C1-4 alkyl or C1-4 alkoxy.

